

REMARKS

Claims 1-58 are pending. In response to a requirement for restriction, Group I, Claims 1-31 and 40-45, has been elected for examination. Claims 32-39 and 46-58 have been withdrawn from consideration and, by this amendment, canceled. Claims 1-23, 26-31, and 40-45 have been rejected. The indication of allowability of Claims 24 and 25 is noted with appreciation. Reconsideration and allowance of Claims 1-31 and 40-45 in view of the above election and following remarks is respectfully requested.

Information Disclosure Statement

The Examiner has acknowledged receipt of the Information Disclosure Statements filed June 30, 2003, January 30, 2004, and February 7, 2005, and has stated that these statements have been considered. Copies of these statements were enclosed with the Examiner's Action. Applicants respectfully request that the Examiner provide copies of Examiner-initialed Information Disclosure Statements in the next Examiner's Action indicating that the Examiner has considered each reference.

Election Restriction

Applicants affirm the election of Group I, Claims 1-31 and 40-45, for examination. Claims 32-39 and 46-58 have been canceled.

The Objection of Claim 45

Claim 45 has been objected to under 37 C.F.R. § 1.75(a) as being in improper form for depending from non-elected claims. Applicants submit that Claim 45 was amended to depend from Claim 1 only in the Preliminary Amendment filed June 30, 2003. In view of that amendment, withdrawal of the objection of Claim 45 is respectfully requested.

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS^{PLLC}
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

The Rejection of Claims 1, 4-6, 8, 11, 26, 40, 43, and 44 Under 35 U.S.C. §§ 102(a) and 102(e)

Claims 1, 4-6, 8, 11, 26, 40, 43, and 44 stand rejected under 35 U.S.C. §§ 102(a)/(e) as being anticipated by U.S. Patent No. 6,180,942, issued to Tracy et al. Withdrawal of the rejection is respectfully requested for the following reasons.

Claims 1 and 40 are the pending independent claims. Claims 4-6, 8, 11, and 26 depend from Claim 1. Claims 43 and 44 depend from Claim 40. Independent Claims 1 and 40 each recites a charged particle detection system that includes a plurality of charge-collecting zones, "wherein each charge-collecting zone is isolated and electrostatically shielded from neighboring charge-collecting zones by a separator comprising an insulated electrical conductor held at a reference potential." The claimed charged particle detection system includes a plurality of charge-collecting zones in which each charge collecting zone is electrically and capacitively decoupled from all others, a feature that the cited reference does not describe.

The Tracy reference describes charge-collection zones supported on a semiconductor-type wafer substrate. The reference teaches that the substrate is an insulative substrate. At Col. 4, line 26, the reference states that "[a]rray detector 30 is formed on a silicon substrate 32." Attached for the Examiner's consideration is **Exhibit A**, a copy of a portion of "Microelectronic Circuit Design," Richard C. Jager, WCB/McGraw-Hill, 1997, pages 25-30, relating to solid-state electronic materials. At page 30, section 2.5, equation (2.9), the text states that the resistivity of single crystal silicon is $3.38E5 \text{ Ohm}\cdot\text{cm}$. Materials with resistivities greater than $1E5 \text{ Ohm}\cdot\text{cm}$ are insulators. See page 25, section 2.1, paragraph 1. Further, the charge-collecting zones in the Tracy reference may be supported on insulative material interposed between the metal collector plate and the insulative substrate. At Col. 4, lines 43-46, the reference states that "each detector element 34 has an insulating material 35 under it and therefore disposed between detector element 34 and substrate 32." Moreover, the Tracy reference nowhere teaches a conductor placed between neighboring charge collecting zones,

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS^{PLLC}
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

much less an insulated conductor held at a reference potential to isolate and electrostatically shield neighboring charge-collecting zones, as recited in the claimed invention. The Tracy reference illustrates a simple gap between neighboring charge-collecting zones as shown in Figure 4 of the reference.

Because the Tracy reference fails to disclose each and every element of independent Claims 1 and 40, the reference is not anticipatory. Withdrawal of the rejection is respectfully requested.

Applicants further submit that the Tracy reference fails to teach, suggest, provide any motivation to make, or otherwise render obvious the claimed invention, which includes charge-collecting zones that are isolated and electrostatically shielded from neighboring charge-collecting zones by a separator comprising an insulated electrical conductor held at a reference potential.

The Rejection of Claims 17, 18, and 29-31 Under 35 U.S.C. § 103(a)

Claims 17, 18, and 29-31 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Tracy reference. Withdrawal of the rejection is requested for the following reasons.

Claims 17, 18, and 29-31 depend from Claim 1. As noted above, Claim 1 recites a charged particle detection system that includes a plurality of charge-collecting zones, "wherein each charge-collecting zone is isolated and electrostatically shielded from neighboring charge-collecting zones by a separator comprising an insulated electrical conductor held at a reference potential."

To establish *prima facie* obviousness of a claim invention, each claim limitation must be taught or suggested in the prior art. The claimed charged particle detection system includes a plurality of charge-collecting zones in which each charge-collecting zone is electrically and capacitively decoupled from all others, a feature that the cited reference fails to teach or suggest.

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS^{PLLC}
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

The Tracy reference teaches, at Col. 4, line 26, that the "[a]rray detector 30 is formed on a silicon substrate 32," and, at Col. 4, lines 43-46, that "each detector element 34 has an insulating material 35 under it and therefore disposed between detector element 34 and substrate 32." As noted above, silicon is an insulative material. The Tracy reference merely teaches supporting charge-collecting zones on insulative materials and nowhere teaches an insulated conductor held at a reference potential to electrostatically shield neighboring charge-collecting zones, effecting electrostatic and capacitive decoupling between neighboring charge-collecting zones. The Tracy reference illustrates a simple gap between neighboring charge-collecting zones, see Figure 4.

Because the cited reference fails to teach, suggest, provide any motivation to make, or otherwise render obvious the claimed invention, the claimed invention is nonobvious and patentable over the cited references. Withdrawal of the rejection is respectfully requested.

The Rejection of Claims 2 and 3 Under 35 U.S.C. § 103(a)

Claims 2 and 3 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Tracy reference in view of U.S. Patent No. 4,720,706, issued to Stine. Withdrawal of the rejection is requested for the following reasons.

Claims 2 and 3 depend from Claim 1. The deficiencies of the teaching of the Tracy reference noted above with regard to Claim 1 is not cured by the teaching of the Stine reference. The Stine reference describes at Col. 5, lines 24-25, a "monochromatic image [will be] perceived should transmissions be of the same hue with intensity shadings." The Stine reference addresses features relating to color.

Because the cited references, either alone or in combination, fail to teach, suggest, provide any motivation to make, or otherwise render obvious the claimed invention, the claimed invention is nonobvious and patentable over the cited references. Withdrawal of the rejection is respectfully requested.

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS^{PLLC}
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

The Rejection of Claim 7 Under 35 U.S.C. § 103(a)

Claim 7 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the Tracy reference in view of U.S. Patent No. 5,994,694, issued to Frank et al. Withdrawal of the rejection is requested for the following reasons.

Claim 7 depends from Claim 1. The deficiencies of the teaching of the Tracy reference noted above with regard to Claim 1 are not cured by the teaching of the Frank reference. The Frank reference describes a biomolecule detector having a cryogenic, superconducting tunnel junction sensor.

Because the cited references, either alone or in combination, fail to teach, suggest, provide any motivation to make, or otherwise render obvious the claimed invention, the claimed invention is nonobvious and patentable over the cited references. Withdrawal of the rejection is respectfully requested.

The Rejection of Claims 9 and 10 Under 35 U.S.C. § 103(a)

Claims 9 and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Tracy reference in view of U.S. Patent No. 5,386,115, issued to Freidhoff et al. Withdrawal of the rejection is requested for the following reasons.

Claims 9 and 10 depend from Claim 1. The deficiencies of the teaching of the Tracy reference noted above with regard to Claim 1 are not cured by the teaching of the Freidhoff reference. The Freidhoff reference describes a solid state mass spectrograph having an inlet, gas ionizer, mass filter, and detector array all formed within a cavity in a semiconductor substrate.

Because the cited references, either alone or in combination, fail to teach, suggest, provide any motivation to make, or otherwise render obvious the claimed invention, the claimed invention is nonobvious and patentable over the cited references. Withdrawal of the rejection is respectfully requested.

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS^{PLLC}
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

The Rejection of Claims 11-16, 19-23, 27, 28, 41, and 42 Under 35 U.S.C. § 103(a)

Claims 11-16, 19-23, 27, 28, 41, and 42 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Tracy reference in view of U.S. Patent No. 5,198,676, issued to Benveniste et al. Withdrawal of these rejections is respectfully requested for the following reasons.

Claims 11-16, 19-23, 27, and 28 depend from Claim 1, and Claims 41 and 42 depend from Claim 40.

The deficiencies of the teaching of the Tracy reference noted above with regard to Claims 1 and 40 are not cured by the teaching of the Benveniste reference. The Benveniste reference describes an ion beam intensity and emittance measuring system having an insulating substrate that supports a plurality of charge-collecting zones.

Because the cited references, either alone or in combination, fail to teach, suggest, provide any motivation to make, or otherwise render obvious the claimed invention, the claimed invention is nonobvious and patentable over the cited references. Withdrawal of the rejection is respectfully requested.

The Obviousness-Type Double Patenting Rejections

Claims 11, 13-16, 30, 40, and 43-45 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1, 9, 18, 19, 26, and 27 of U.S. Patent No. 6,847,036.

Claims 6 and 9 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 2, 4, 10, and 11 of U.S. Patent No. 6,847,036.

Claim 7 stands rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claim 13 of U.S. Patent No. 6,847,036.

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS^{PLLC}
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

Claims 19 and 20 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 7, 8, 16, 17, 24, and 25 of U.S. Patent No. 6,847,036.

Claim 27 stands rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 14 and 15 of U.S. Patent No. 6,847,036.

Claim 31 stands rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claim 30 of U.S. Patent No. 6,847,036.

Withdrawal of the obviousness-type double patenting rejections is respectfully requested for the following reasons.

Applicants respectfully submit that the obviousness-type double patenting rejection is improper. MPEP 804.01 relates to the prohibition of double patenting rejections pursuant to 35 U.S.C. § 121. The third sentence of 35 U.S.C. § 121 prohibits the use of a patent, which has issued based on an application that has been subject to a requirement for restriction, as a reference against the divisional application, if the divisional application is filed before the issuance of the patent.

The present application is a divisional of Application No. 09/744,360, now U.S. Patent No. 6,847,036, which has been cited against the present application in the double patenting rejections. The present application was filed before the issuance of the '036 patent. Therefore, because the present application is a divisional of the application that issued as the '036 patent and because the present application was filed before the issuance of the '036 patent, withdrawal of the double-patenting rejection is respectfully requested pursuant to 35 U.S.C. § 121.

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LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS^{PLLC}
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

Conclusion

In view of the foregoing remarks, applicants believe that Claims 1-31 and 40-45 are in condition for allowance. If any issues remain that may be expeditiously addressed in a telephone interview, the Examiner is encouraged to telephone applicants' attorney at 206-695-1755.

Respectfully submitted,

CHRISTENSEN O'CONNOR
JOHNSON KINDNESS^{PLLC}

George E. Renzoni

George E. Renzoni, Ph.D.
Registration No. 37,919
Direct Dial No. 206.695.1755

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Date:

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George E. Renzoni

GER:md

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS^{PLLC}
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100